

REMARKS

The Office Action dated December 28, 2004 has been carefully considered. Claim 1 is amended and claims 6 and 7 are cancelled. Claims 1-5 and 8-11 are pending in this application.

35 U.S.C § 103(a)

Claims 1 - 5 and 8 - 11 stand rejected under 35 U.S.C § 103(a) as being unpatentable over U.S. Patent No. 4,256,783 to Takada et al., in view of U.S. Patent No. 4,436,146 to Smolarek and U.S. Patent No. 4,142,581 to Yoshitomi et al. Claim 1 is currently amended to recite the limitations originally recited in claims 6 and 7. The Office Action fails to establish a prima facie case that the claims as currently amended would have been obvious to a person of ordinary skill in the art.

Claim 1 recites the feature of an "expansion joint formed around the periphery of each of the chambers." This feature is neither taught nor suggested in Takada et al. or Smolarek. Smolarek describes the expansion joints formed around the periphery of the reactor, and Yoshitomi et al. describes the connection structure between plates and tubes, which are partial structures of the presently claimed apparatus, but neither Smolarek, Yoshitomi et al., nor Takada et al. disclose that these structures are applied to the reactor for gas-phase catalytic reaction, and that the amount of leakage of heat medium within the apparatus is restricted so as to operate the reactions at different temperatures in the two chambers.

The Office Action asserts that it would have been obvious to one of ordinary skill in the art to have included expansion joints as disclosed by Smolarek in the region between the tube sheet and reaction shell "motivated by the desire to improve the structural integrity of the resulting reactor." The Applicant suggests that this provided motivation rests on impermissible hindsight. The Patent and Trademark Office must demonstrate by substantial evidence that the prior art relied upon contains some suggestion or incentive that would have motivated an ordinarily skilled person in the art to modify the subject matter of the reference or combine the subject matter to achieve the claimed subject matter. *In re Fine*, 837 F.2d 1071, 1074 (Fed. Cir. 1988).

In this case the Office Action provides no such suggestion or incentive within the references but uses one of the problems addressed by the invention as motivation for modifying the prior art to achieve the claimed subject matter.

To further distinguish the invention from the prior art, claim 1 now recites the feature "wherein an amount of water migrating from the upper chamber to the lower chamber, or from the lower chamber to the upper chamber, fulfills the relation, amount of leakage (ml/hour per reaction tube) $\leq 1.27 \times 10^{-5} \times$ pressure difference (Pa), in a hydraulic test." In contrast, Takada et al. disclose a reactor in which leakage between the upper and lower chambers is permitted. Moreover, Takada et al. do not disclose or suggest that when operating the reactions in different temperatures in the two chambers, the leakage between the chambers should be restricted in order to achieve suitable temperature control. In fact, Takada et al. do not teach a closed system between the two chambers. Therefore, there is no motivation to define the amount of leakage in operating the reactions in different temperatures in the two chambers.

The Office Action indicates, "it is fairly reasonable to assumed [sic] that the apparatus of the prior art would leak just as much or less than claimed." This assumption is not reasonable since, as indicated above, the claimed apparatus is neither disclosed nor suggested by the prior art. Additionally, there is no suggestion that it is desirable to restrict the amount of leakage of heat medium so as to operate the reactions at different temperatures in the two chambers, or that restricting the amount of leakage of water in a hydraulic test in order to restrict the amount of leakage is a suitable way to achieve the temperature control. Hence, persons skilled in the art would not combine or modify the prior art to lead to the present invention.

In view of the foregoing, Applicants submit that all pending claims are in condition for allowance and request that all claims be allowed. The Examiner is invited to contact the undersigned should she believe that this would expedite prosecution of this application. It is believed that no fee is required. The Commissioner is authorized to charge any deficiency or credit any overpayment to Deposit Account No. 13-2165.

Respectfully submitted,

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